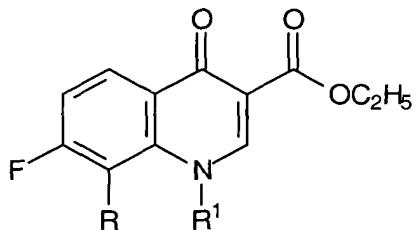
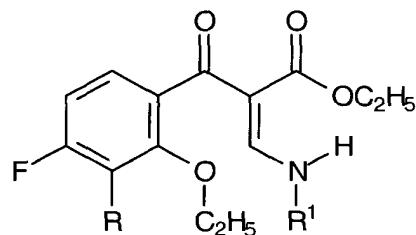


WHAT IS CLAIMED IS:

1. A process for preparing a quinolone antibiotic intermediate having the formula:



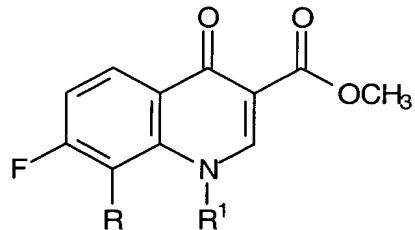
wherein R is C₁-C₂ alkyl, C₁-C₂ fluoroalkyl, C₂-C₄ alkenyl, methoxy, chloro, or bromo; R¹ is a unit selected from the group consisting of C₁-C₂ alkyl, C₂-C₃ alkenyl, C₃-C₅ cycloalkyl, and phenyl, each of which can be substituted by one or more fluorine atoms; said process comprising the step of cyclizing an admixture of quinolone precursors, said admixture comprising a 2-ethoxy substituted intermediate having the formula:



in the presence of a silylating agent.

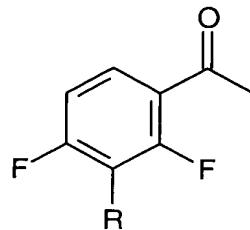
2. A process according to Claim 1 wherein R is -OCH₃.
3. A process according to Claim 1 wherein R is -CH₃, -CH₂F, -CHF₂, and -CF₃.
4. A process according to Claim 1 wherein R is -Cl.
5. A process according to Claim 1 wherein R is -CH₂CH=CH₂.
6. A process according to Claim 1 wherein said cyclization is conducted in the presence of a solvent selected from the group consisting of methylene chloride, dichloromethane, hexamethylphosphoramide, tetrahydrofuran, benzene, toluene, alkanes, and mixtures thereof.

7. A process according to Claim 1 wherein said silylating agent is selected from the group consisting of chlorotrimethylsilane, N,O-bis(trimethyl-silyl)acetamide, N,O-bis(trimethylsilyl)trifluoroacetamide, bis(trimethylsilyl)urea, hexamethyltrisilazane, N-methyl-N-trimethylsilyl trifluoroacetamide, 1-trimethylsilyl-imidazole, trimethylsilyl trifluourmethanesulfonate, *tert*-butyldimethylchlorosilane, 1-(*tert*-butyldimethylsilyl)imidazole, N-*tert*-butyldimethyl-N-methyltrifluoroacetamide, *tert*-butyldimethylsilyl trifluoromethanesulfonate, *tert*-butylphenylchlorosilane, *tert*-butyl-methoxyphenylbromosilane, dimethylphenylchlorosilane, triethylchlorosilane, trimethyl-silyl trifluoromethanesulfonate, and triphenylchlorosilane.
8. A process according to Claim 7 wherein said silylating agents is N,O-bis(trimethylsilyl)acetamide.
9. A process according to Claim 1 wherein R¹ cyclopropyl, methyl, ethyl, and benzyl.
10. A process according to Claim 1 wherein said cyclization is conducted by refluxing in the presence of a solvent.
11. A process for preparing a quinolone antibiotic intermediate having the formula:

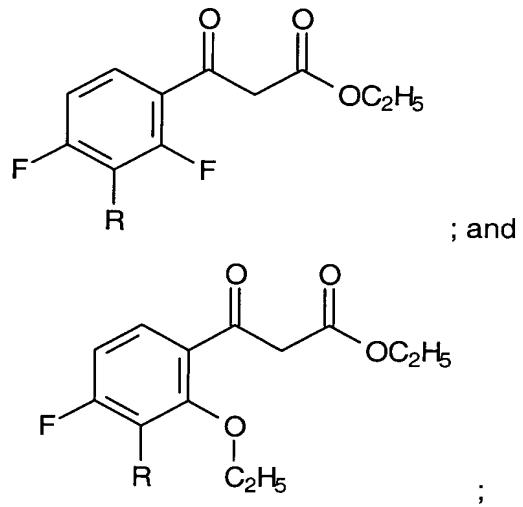


wherein R is C₁-C₂ alkyl, C₁-C₂ fluoroalkyl, C₂-C₄ alkenyl, methoxy, chloro, or bromo; R¹ is a unit selected from the group consisting of C₁-C₂ alkyl, C₂-C₃ alkenyl, C₃-C₅ cycloalkyl, and phenyl, each of which can be substituted by one or more fluorine atoms; said process comprising the steps of:

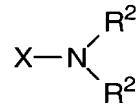
- a) reacting an acetophenone having the formula:



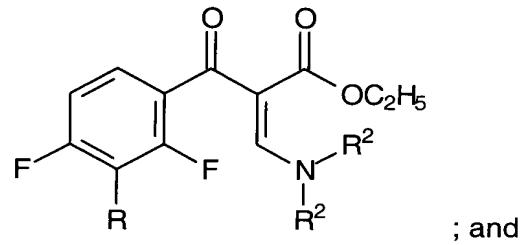
with diethylcarbonate in the presence of a base to form an admixture of 4-fluoro β -ketoesters having the formula:

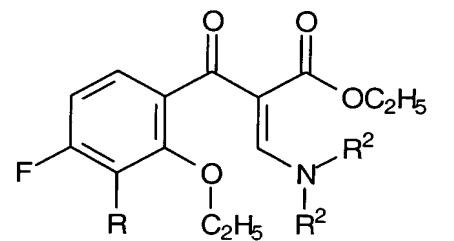


b) reacting said admixture with a Knoevenagel Reaction adduct having the formula:

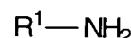


wherein R^2 is $\text{C}_1\text{-C}_4$ linear or branched alkyl, phenyl, and mixtures thereof; X is an aldehyde unit or an aldehyde unit equivalent; to form an admixture of imine intermediates having the formula:

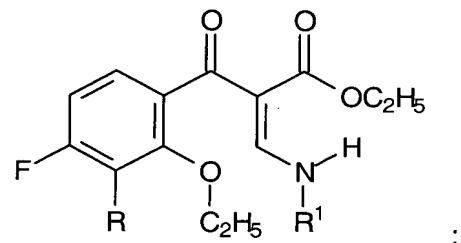
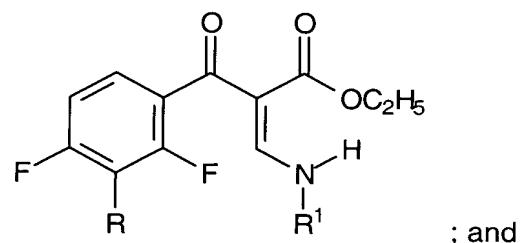




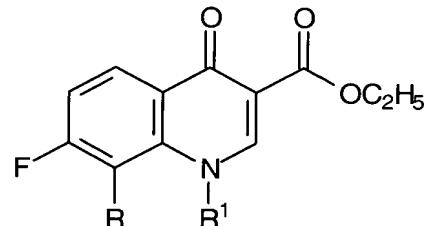
c) reacting said imine intermediate admixture with an amine having the formula:



to form an admixture of quinolone intermediates having the formula:

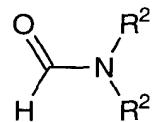


d) cyclizing said quinolone intermediate admixture in the presence of a silylating agent to form said quinoline antibiotic intermediate having the formula:

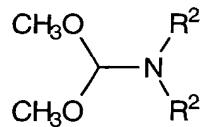


12. A process according to Claim 11 wherein said base in step (a) is a metal hydride selected from the group LiH, NaH, KH, CaH₂ and mixtures thereof.

13. A process according to Claim 11 wherein said base in step (a) is an inorganic base selected from the group Na_2CO_3 , NaHCO_3 , K_2CO and mixtures thereof.
14. A process according to Claim 11 wherein said base in step (a) an organic base selected from butyl lithium and lithium diisopropylamide.
15. A process according to Claim 11 wherein step (a) comprises reacting one mole of a substituted acetophenone with 2.2 moles of a base, and 2.4 moles of diethylcarbonate.
16. A process according to Claim 11 wherein step (a) is conducted in the presence of a solvent selected from the group consisting of methylene chloride, dichloromethane, hexamethylphosphoramide, tetrahydrofuran, benzene, toluene, alkanes, and mixtures thereof.
17. A process according to Claim 11 wherein said adduct is an aldehyde having the formula:



18. A process according to Claim 11 wherein said adduct is a dimethyl acetal having the formula:



wherein R^2 is methyl, ethyl, and mixtures thereof.

19. A process according to Claim 11 wherein step (b) is conducted in the presence of toluene wherein said adduct is a dimethyl acetal and wherein further the admixture obtained from step (a) and said dimethyl acetal is heat to azeotropically remove any methanol which is formed.

20. A process according to Claim 11 wherein said primary amine in step (c) is selected from the group consisting of methylamine, ethylamine, and cyclopropylamine.
21. A process according to Claim 11 wherein step (c) is conducted in the presence of a solvent selected from the group consisting of methylene chloride, dichloromethane, hexamethylphosphoramide, tetrahydrofuran, benzene, toluene, alkanes, and mixtures thereof.
22. A process according to Claim 11 wherein step (d) is conducted in the presence of a solvent selected from the group consisting of methylene chloride, dichloromethane, hexamethylphosphoramide, tetrahydrofuran, benzene, toluene, alkanes, and mixtures thereof.
23. A process according to Claim 11 wherein said silylating agent is selected from the group consisting of chlorotrimethylsilane, N,O-bis(trimethyl-silyl)acetamide, N,O-bis(trimethylsilyl)trifluoroacetamide, bis(trimethylsilyl)urea, hexamethyltrisilazane, N-methyl-N-trimethylsilyl trifluoroacetamide, 1-trimethylsilyl-imidazole, trimethylsilyl trifluormethanesulfonate, *tert*-butyldimethylchlorosilane, 1-(*tert*-butyldimethylsilyl)imidazole, N-*tert*-butyldimethyl-N-methyltrifluoroacetamide, *tert*-butyldimethylsilyltrifluoromethane sulfonate, *tert*-butylphenylchlorosilane, *tert*-butyl-methoxyphenylbromosilane, dimethylphenylchlorosilane, triethylchlorosilane, trimethyl-silyl trifluoromethanesulfonate, and triphenylchlorosilane.
24. A process according to Claim 23 wherein said silylating agents is N,O-bis(trimethylsilyl)acetamide.
25. A process according to Claim 11 wherein step (d) is conducted by refluxing in the presence of a solvent.